Flood stages during April, 1923—Continued.

River and station.	Flood stage.	Above flood stages—dates. From—	To—	Crest. Stage.	Date.
EAST GULF DRAINAGE—continued.					
Chickasawhay:		*Feet.*		*Feet.*	
Enterprise, Miss.	21	6	7	24.6	6
Shubuta, Miss.	27	7	10	28.9	2
Leaf:					
Hattiesburg, Miss.	19	6	7	20.0	6
Pearl:					
Jackson, Miss.	20	(2)	28	30.5	6
Columbia, Miss.	18	(2)	26	26.5	6
West Pearl:					
Pearl River, La.	13	(2)	(1)	16.9	9
GREAT LAKES DRAINAGE.					
Pine:					
Alma, Mich.	6	6	6	6.2	6
Do.	6	8	8	6.1	8
MISSISSIPPI DRAINAGE.					
Mississippi:					
New Madrid, Mo.	34	(2)	2	34.6	1
Memphis, Tenn.	35	(2)	4	35.8	1
Helena, Ark.	44	(2)	7	45.4	1
Arkansas City, Ark.	48	(2)	10	49.4	4–7
Greenville, Miss.	42	6	7	42.0	6–7
Vicksburg, Miss.	45	(2)	19	48.0	9–10
Natchez, Miss.	46	3	21	48.7	14
Baton Rouge, La.	35	4	29	38.8	15
Donaldsonville, La.	28	5	27	30.6	16
New Orleans, La.	17	8	23	18.1	14–16
Wisconsin:					
Merrill, Wis.	11	21	23	11.9	21
Knowlton, Wis.	12	20	24	16.0	22
Spirit:					
Tomahawk, Wis.	14	21	22	14.7	22
Illinois:					
Peru, Ill.	14	(2)	2	14.1	1
Henry, Ill.	7	(2)	20	9.0	1–2
Peoria, Ill.	16	(2)	1	16.5	1
Havana, Ill.	14	(2)	1	14.1	1
Beardstown, Ill.	12	(2)	17	14.6	1
St. Francis:					
Marked Tree, Ark.	17	(2)	15	18.7	1–3
North Canadian:					
Woodward, Okla.	3	29	29	3.6	29
Petit Jean:					
Danville, Ark.	20	29	(1)	22.3	30
Black:					
Black Rock, Ark.	14	(2)	2	16.0	1
Do.	14	5	8	16.1	5
Yazoo:					
Yazoo City, Miss.	25	(2)	(1)	30.3	25
Tallahatchie:					
Swan Lake, Miss.	25	(2)	(1)	28.8	8-10,13-15
Atchafalaya:					
Simmesport, La.	41	7	7	41.0	7
Do.	41	9	26	43.3	16–17
Melville, La.	37	4	(1)	39.9	16–17
WEST GULF DRAINAGE.					
Sabine:					
Logansport, La.	25	6	14	27.1	8
Bon Wier, Tex.	20	(2)	26	22.3	5,15
Orange, Tex.	4	4	(1)	5.8	16–17
Neches:					
Rockland, Tex.	22	13	20	27.6	15
Beaumont, Tex.	7	(2)	5	7.9	2–3
Do.	7	8	10	7.9	8
Do.	7	12	29	11.2	16
Trinity:					
Bridgeport, Tex.	25	26	27	25.7	26
Dallas, Tex.	25	26	(1)	32.2	29
Trinidad, Tex.	28	28	(1)	32.1	30
Liberty, Tex.	25	(2)	6	26.8	3–4
Do.	25	14	23	27.6	20
Brazos:					
Freeport, Tex.	4	17	17	5.8	17
Guadalupe:					
Victoria, Tex.	16	16	16	17.0	16

[1] Continued into May. [2] Continued from March.

MEAN LAKE LEVELS DURING APRIL, 1923.

By UNITED STATES LAKE SURVEY.

[Detroit, Mich., May 7, 1923.]

The following data are reported in the "Notice to Mariners" of the above date:

Data.	Lakes.[1] Superior.	Michigan and Huron.	Erie.	Ontario.
Mean level during April, 1923:	*Feet.*	*Feet.*	*Feet.*	*Feet.*
Above mean sea level at New York	601.39	579.18	571.31	245.33
Above or below—				
Mean stage of March, 1923	−0.06	+0.20	+0.33	+0.59
Mean stage of April, 1922	−0.05	−0.78	−1.01	−0.73
Average stage for April, last 10 years	−0.43	−1.25	−1.17	−1.06
Highest recorded April stage	−1.30	−4.05	−2.87	−3.10
Lowest recorded April stage	+0.85	−0.04	+0.05	+0.49
Average relation of the April level to—				
March, level		+0.40	+0.70	+0.70
May, level		−0.30	−0.40	−0.30

[1] Lake St. Clair's level: In April, 574.14 feet.

EFFECT OF WEATHER UPON CROPS AND FARMING OPERATIONS, APRIL, 1923.

By J. B. KINCER, Meteorologist.

The temperature for the month of April averaged near the normal in practically all sections of the country, but warmth in different portions of the month varied greatly and on the whole temperature conditions were unfavorable for agricultural interests. Unusually low temperatures for the season prevailed during the first of the month when subzero readings were reported from points in the northern Lake region and freezing extended to the central portions of the east Gulf States. Precipitation was frequent and heavy in the South, except in the south Atlantic districts, and was much above normal in California. Somewhat less than the normal amount was received from the Ohio and central Mississippi Valleys northward. Sunshine was scanty in most sections east of the Rocky Mountains, especially in the upper Mississippi Valley and the west Gulf area.

The cool, cloudy weather during the first half of the month in the central and northern States east of the Rocky Mountains retarded vegetative development considerably, while frequent rains in the South delayed field work in that section and the unseasonable cold caused delay in farm operations to the northward.

The latter half of the month was much more favorable for agricultural interests in the interior and northern States, as warmer weather and more sunshine prevailed. Winter wheat showed some improvement in the Ohio Valley States, but the crop was backward and growth slow, because of the cool spring, and moisture was needed at the close of the month in much of this area as well as in the Lake region. Generous rains in Nebraska during the week ending April 24 greatly benefited fall-seeded grains, while the long drought in western Kansas was effectually broken during the following week. Much better weather for field work prevailed in the spring-wheat States during the latter part of the month, although it continued too wet in a few localities. Conditions were more favorable also for seeding oats and this work was completed or well advanced at the close of the month in the later, northern districts.

The preparation of soil for corn and planting made slow progress until the last two weeks of the month when better advance was possible. Much corn ground was prepared and some planting was done in the principal producing areas. The month was generally unfavorable in the Cotton Belt owing to frequent rains and wet soil. On the whole cotton made fair progress in Texas and planting

was well advanced at the close of the month, except in the wetter areas. Planting made better progress in the central and eastern portions of the belt the latter part of the month, but was generally backward.

Conditions were mostly favorable for pastures and ranges except that grass started slowly in most central and eastern portions of the country because of low temperatures. Ranges were needing moisture in the Southwest and rain was needed from the Lake region eastward, but the generous precipitation in the central and southern Plains area was very beneficial.

It was too cool for gardens and truck crops in the Central States, but truck as a rule made fairly good progress in the South. Good rains broke the drought in the trucking districts of southeastern Florida early in the month and melons made fair progress in that State. Early peaches showed serious damage in parts of the upper Ohio Valley and eastern West Virginia from the freeze the latter part of March, but the weather during April was generally favorable for all fruits that had escaped the previous freezes, although there was some damage by frost in parts of the more western States, particularly in Utah and Oregon. Oranges and lemons blossomed heavily and were setting well in California, but conditions were rather less favorable in Florida where fruit was dropping in the drier areas.

CLIMATOLOGICAL TABLES.[1]

CONDENSED CLIMATOLOGICAL SUMMARY.

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Condensed climatological summary of temperature and precipitation by sections, April, 1923.

Section.	Temperature.							Precipitation.					
	Section average.	Departure from the normal.	Monthly extremes.					Section average.	Departure from the normal.	Greatest monthly.		Least monthly.	
			Station.	Highest.	Date.	Station.	Lowest.	Date.			Station.	Amount.	Station.	Amount.
	°F.	°F.		°F.			°F.		In.	In.		In.		In.
Alabama	63.3	+0.2	2 stations	90	[2] 25	2 stations	24	1	5.97	+1.45	Cochrane	10.91	Eufaula	2.56
Alaska														
Arizona	57.5	−1.0	Gila Bend	99	28	Fort Valley	11	23	0.42	−0.10	Williams	2.49	7 stations	0.00
Arkansas	61.4	+0.2	Calico Rock	95	24	Bee Branch	23	1	6.30	+1.52	Arkansas City	10.24	Harrison	1.87
California	54.3	−2.4	Greenland Ranch	102	16	2 stations	18	[2] 3	4.06	+2.38	Giant Forest	17.25	Indio	0.00
Colorado	41.5	−0.7	2 stations	87	[2] 17	Estes Park	−10	[2] 16	1.31	−0.58	Savage Basin	4.34	Yampa	T.
Florida	71.6	+1.8	Orlando	99	23	3 stations	34	1	2.39	−0.37	De Funiak Springs	8.92	Bradentown	0.01
Georgia	63.7	+0.3	Statesboro	96	23	Clayton	16	1	3.92	+0.36	Canton	7.91	Waycross	0.82
Hawaii	70.5	+0.5	2 stations	90	[2] 25	Volcano Observatory, Hawaii.	49	16	11.70	+3.71	Glenwood, Hawaii	60.80	Kekaha, Kauai	2.22
Idaho	44.2	−0.5	Hollister	88	17	Stanley	0	[2] 8	1.86	+0.38	Cuprum	4.02	Glenns Ferry	0.10
Illinois	51.2	−0.6	Harrisburg	89	22	3 stations	16	1	2.39	−1.02	New Burnside	5.12	Freeport	0.85
Indiana	49.0	−2.7	Madison	87	27	Laporte	7	1	2.47	−1.00	Rome	5.12	Notre Dame	0.90
Iowa	48.4	−0.3	3 stations	85	[2] 29	Inwood	11	8	2.09	−0.77	Little Sioux	4.26	Keosauqua	0.47
Kansas	54.3	+0.7	3 stations	88	[2] 19	Smith Center	12	8	2.49	−0.15	Overbrook	5.06	Hugoton	0.15
Kentucky	54.8	−1.1	2 stations	90	[2] 22	2 stations	13	1	4.88	+0.94	Taylorsville	6.79	Jackson	2.96
Louisiana	67.9	+1.0	Alexandria	92	24	2 stations	32	[2] 1	6.24	+1.52	Alexandria	12.97	Morgan City	1.60
Maryland-Delaware	51.5	−0.8	Frederick, Md	88	21	Grantsville, Md	−3	1	4.16	+0.82	Crisfield, Md	7.09	State Sanatorium, Md.	2.29
Michigan	39.6	−2.6	2 stations	83	[2] 20	Bergland	−34	1	1.89	−0.45	Mackinac Island	4.30	Sidnaw	0.40
Minnesota	40.7	−2.2	Red Lake	88	19	Warroad	−10	3	1.72	−0.29	Canby	4.04	Red Lake	0.21
Mississippi	64.1	+0.1	Waynesboro	90	26	Hernando	23	1	8.54	+3.12	Brookhaven	16.16	Poplarville	3.26
Missouri	54.2	−0.6	Hollister	92	23	Lebanon	14	1	3.12	−0.74	Poplar Bluff	6.08	Gorin	1.12
Montana	41.6	−0.6	Livingston	87	16	Wheaton	−12	7	1.08	+0.01	Livingston	5.84	Medicine Lake	0.22
Nebraska	48.1	−0.7	3 stations	91	19	Harrison	6	24	2.50	+0.02	Table Rock	6.27	Bingham	0.25
Nevada	47.6	−1.3	2 stations	89	[2] 16	Rye Patch	4	24	1.12	+0.42	Lamoille	3.31	2 stations	0.10
New England	42.4	−0.2	2 stations	87	21	Bloomfield, Vt	−12	1	5.03	+1.97	Cornish, Me	7.59	Cornwall, Vt	2.35
New Jersey	50.0	+0.5	Paterson	91	21	Culvers Lake	3	1	3.59	−0.10	Camp Dix	6.59	Phillipsburg	2.27
New Mexico	50.5	+0.1	Deming (near)	91	29	McGaffey Ranger Station.	8	5	1.25	+0.13	Logan	4.30	3 stations	0.00
New York	43.3	−1.0	Rhinebeck	92	21	North Lake	−24	1	2.59	−0.21	Medford	5.01	Lauterbrunnen	0.40
North Carolina	57.1	−0.5	4 stations	91	[2] 21	3 stations	7	1	4.18	+0.61	Rock House	6.90	Wilmington	1.28
North Dakota	38.6	−3.1	Jamestown	89	18	Willow City	−15	1	1.45	+0.07	Dunn Center	3.82	Pembina	T.
Ohio	48.4	−1.4	Clarington	88	22	2 stations	2	1	2.60	−0.58	Peebles	5.76	Youngstown	1.16
Oklahoma	60.2	+0.5	Holdenville	93	7	Oakwood	22	5	4.00	+0.84	McAlester	7.43	Kenton	0.60
Oregon	48.3	+0.7	2 stations	88	16	Crater Lake	5	18	2.33	−0.08	Willow Creek	7.27	Warmspring	0.15
Pennsylvania	48.3	−0.4	Catawissa	89	21	3 stations	−5	1	2.94	−0.57	Coatesville	5.89	Turnerville	1.00
Porto Rico	74.1	−1.1	2 stations	94	[2] 19	Aibonito	47	[2] 15	5.87	+1.12	Maricao	14.55	Santa Isabel	1.77
South Carolina	61.5	−0.9	7 stations	94	23	Landrum	18	1	3.48	+0.50	Anderson	6.25	Paris Island	0.70
South Dakota	44.4	−0.9	2 stations	95	[2] 18	Mud Butte	−5	8	1.72	−0.17	Castlewood	4.08	Elk Mountain	0.31
Tennessee	57.6	−0.9	2 stations	88	[2] 23	2 stations	14	1	5.07	+0.55	Waynesboro	9.42	Elizabethtown	2.19
Texas	66.2	+0.1	San Benito	103	20	Lieb	27	8	4.16	+0.94	Bon Wier	13.88	3 stations	0.00
Utah	45.4	−1.8	St. George	83	16	Laketown	9	8	2.07	+0.80	High Line City Creek	6.04	Kelton	0.06
Virginia	53.8	−0.6	Columbia	87	21	Burkes Garden	3	1	3.51	+0.20	Diamond Springs	6.85	Radford	1.64
Washington	49.5	+1.8	Hanford	88	16	Bumping Lake	20	9	1.61	−0.54	Quinlault	6.83	Wapato	0.05
West Virginia	50.1	−1.2	Sutton	88	[2] 21	Cheat Bridge	−4	1	3.45	−0.10	Bruceton Mills	6.08	Upper Tract	1.00
Wisconsin	41.0	−2.3	Wisconsin Rapids	85	26	Long Lake	−18	1	2.17	−0.27	Stevens Point	5.35	Cecil	0.66
Wyoming	38.6	−1.9	Deaver	90	18	Moran	−4	10	1.70	+0.09	Middle Fork Ranger Station.	5.58	Hyattville	0.00

[1] For description of tables and charts, see REVIEW, July, 1922, pp. 384-385.

[2] Other dates also.